International Conference on Emerging Economic Issues in a Globalizing World, İzmir, 2008

Capital Flows and the Non-Tradables in the Turkish Economy after Capital Account Liberalization

F. Kemal Kızılca
Ankara University, Turkey

Abstract

This paper investigates the relationship between capital flows and the share of the non-tradables sector in the Turkish economy after capital account liberalization. Findings support a lagged, yet positive effect of capital flows on the share of non-tradables, which brings the economy more vulnerable to the risk of reversal of capital inflows. This underline the importance of a regulation controlling foreign currency denominated borrowings of private sector firms with limited export earnings and elimination of excessive official reserve accumulation which acts as an implicit bailout guarantee.

Introduction

Most of the developing countries liberalized their capital accounts in the 1990s. Liberalization has led to an increase both in the volume and the volatility of international capital flows[1]. Capital surplus of developing countries fluctuated between US$200.1 billion and US$12.9 billion from 1996 to 2002; and increased up to US$82.9 billion in 2003 (UNCTAD, 2004: 58). Net capital flows to Turkey have also increased significantly since the capital account liberalization in 1989. In 2005, the capital surplus of Turkey reached US$ 44 billion approximately, while it was only US$ 780 million in 1989. According to the official statistics, as of the third quarter of 2007, the total foreign debt stock of Turkey is $247 billion (approx. 50% of the annual GDP), 18% of which is short-term[2].

Since the outbreak of the East Asian financial crisis in 1997, the destabilizing effects of volatility of capital flows on developing countries gained central interest in macroeconomics literature. In their seminal paper, Prasad et al. (2003:41) argue that "…, the increase in the 1990s of the volatility of consumption relative to that of income for the MFI [more financially integrated] economies suggests that financial integration has not provided better consumption smoothing opportunities for these economies." In the same vein, Radelet et al. (1998:71) state "…that international financial markets are inherently unstable, at least for developing countries borrowing heavily from abroad at short maturities and in foreign currency". They also stress that there is no evidence suggesting increased financial integration stimulates higher growth in developing countries.

After the Asian crisis, various studies examined the relations among the pro-cyclical behavior of bank credits, price bubbles in the real estate markets and banking crises. Herring and Watchter (1999) and Hilbers *et al.* (2001) show that in economies where banks own a bigger portion of total assets, an increase in real estate prices may start credit-asset price bubble spirals. Similarly, a fall in real estate prices may cause a financial sector distress through reducing the value of bank capital. Collyns and Senhadji (2002) analyze how this spiral ended in with a crisis in Asian countries. Tornell *et al*. (2003), on the other hand, suggest that growth in the relative share of the non-tradables as a whole during capital inflows is one of the important factors causing financial crises in developing economies; while they still favor capital account liberalization on the grounds that despite the crises, long-term average growth rates in these countries are still higher than the pre-liberalization period.

Without dwelling on the issue of long-term growth effects of international capital flows, this paper investigates the real locative effects of foreign credit between tradable and non-tradable sectors (T - and N - sectors henceforth, respectively) in the Turkish economy after the capital account liberalization. Three other studies touched upon the same issue: Yenturk (1999), Çimenoğlu and Yenturk (2005) and Çiftçioğlu (2005) suggest that there is a rising trend of the share of the N-sector investments since the capital account liberalization in Turkey. However, because of the limitations of the dataset used, no statistical analysis was carried in those studies. This paper seeks to

[1] For detailed statistics on capital account liberalization by IMF-member countries, see IMF (2006). For a further discussion on instability and volatility of capital flows see Gabriele et al. (2000).

[2] All the data used in this paper is available at the website of Central Bank Republic of Turkey (www.tcmb.gov.tr) and International Financial Statistics of IMF.

contribute to the literature by measuring the scope of the effect of capital flows on the size of the N-sector production in the Turkish case. It is shown that, in the post-liberalization period, capital inflows stimulated higher growth rate of the N-sector relative to the GDP.

The next section identifies the channels through which capital flows affect T- and N-sectors asymmetrically. The third section depicts how capital flows affected growth and the share of the N-sector in GDP after liberalization in the Turkish economy. Section (iv) provides estimation results. The last section concludes.

Asymmetric Effects of Foreign Capital Flows on Output in Developing Economies

Capital inflows and outflows to a small and open economy affect output asymmetrically. FitzGerald (2000) shows that depressing effects of capital outflows on output dominate the growth effect of inflows in developing countries. Fixed capital formation stimulated by a foreign credit is irreversible; therefore, any adjustment in course of an outflow should be carried through the working capital of firms, which causes output to shrink.

There is also another asymmetry arising from different financing opportunities of T- and N-sector firms. Pledging export earnings as collateral, the T-sector firms can access to external finance while N-sector firms are constrained by the volume of domestic credit. An increase in capital account surplus, therefore, mostly benefits N-sector firms by removing limits on the volume of credit in the banking sector (Tornell and Westermann, 2003). Using a dataset from 35 countries for 1980-1999 period, Tornell et al. (2003) show that foreign credit growth causes N-sector output to grow relatively faster than T-sector in developing countries, an effect which puts them more prone to self-fulfilling crises.

The asymmetry between the financing opportunities of N- and T-sectors is not the only mechanism for N-sector to grow faster during capital inflows. Sachs and Larraín (1993) show that because output is limited by domestic production in N-sector by definition, an increase in aggregate demand caused by a foreign credit expansion shifts production away from T-sector, for which demand can be met by imports. On the other hand, using the data from the Bangladesh economy Hossain (1999) asserts that, because N-sector mostly consists of services for which income elasticity of demand is high, growth stimulated by a credit expansion causes the share of N-sector in GDP to increase.

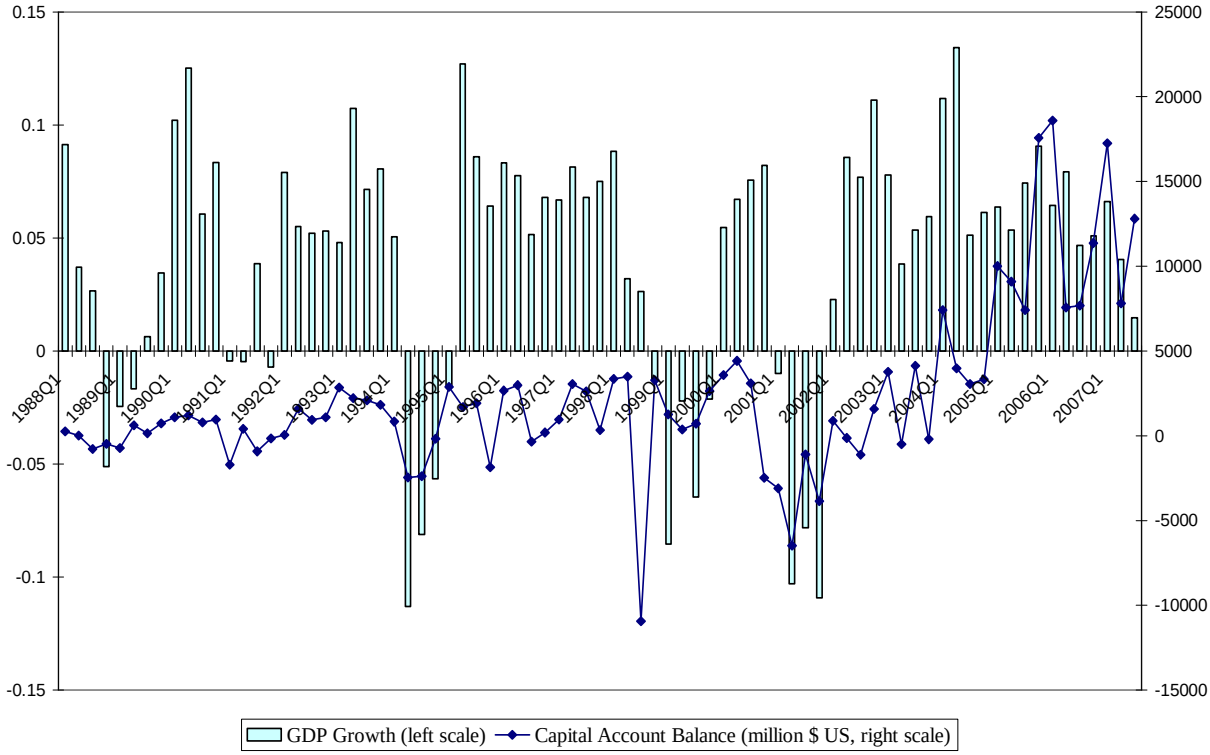
Real exchange rate appreciation caused by the increased demand for N-sector produces a deterioration in the balance of payments, which is considered to be a key factor in making of financial crises. The irreversibility of investments during a capital outflow intensifies the effect of such a crisis on N-sector. This exacerbates the social cost of crises considering the labor-intensive nature of N-sector, which consists mostly of services.

Capital Flows and the Share of the N-Sector in the Turkish Economy

Like many other developing countries, there has been a strong correlation between the capital flows and growth in the Turkish economy, historically. This correlation has even become stronger with the growing integration with the world economy and increasing

size of the capital flows since the 1990's. Boratav and Yeldan (2001:9) state that prior to the capital account liberalization, foreign capital was used to finance the current account deficit, which was mainly determined by the growth rate of the GDP. However, after the capital account liberalization this linkage has been reversed with capital inflows determining the size of the domestic demand, hence, current account deficits. Two important consequences of this reversal are the broken link between current and capital accounts, resulting with excessive reserve accumulation, and the increase in the volatility of the growth rate. In the post-liberalization period, three major crises hit the Turkish economy; each being preceded by net capital outflows (fig. 1).

Figure 1: Foreign capital flows and growth

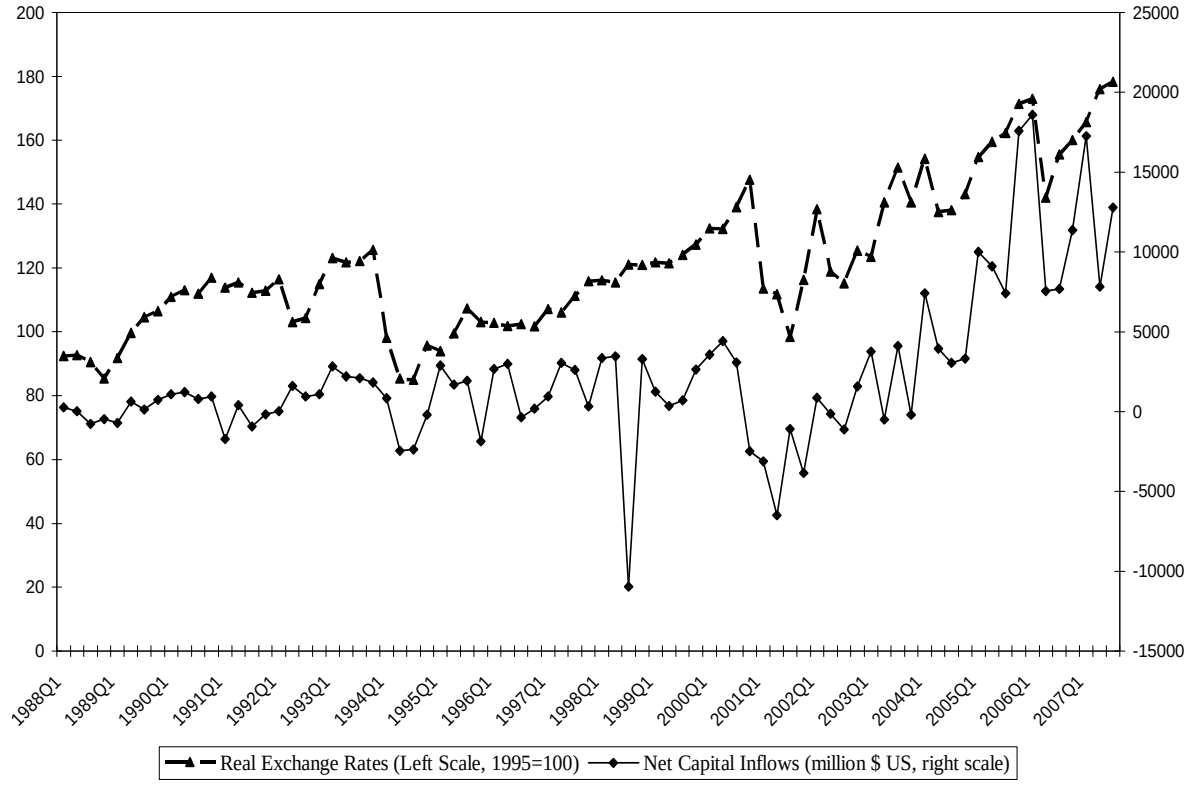


As pointed in the previous section, capital flows affect real exchange rates mainly through two channels: On the real side, inflows may increase the demand for goods and services produced in the N- sector as Sachs and Larraín (1993) point out. The increased demand raises the N-sector good prices, where the T-sector prices are determined in the world markets. On the financial side, inflows may lead to an appreciation through increasing the supply of foreign currency. This appreciation affects the size of the N-sector depending on the price elasticity. With the income effect being constant, the N-sector is expected to grow with appreciation provided that the elasticity is less than unity. In the opposite case, the net effect will depend on the relative importance of demand and price effects of capital flows.

Figure 2 plots the capital flows and real exchange rates in the Turkish economy since the first quarter of 1988. Agénor et al. (1997) and Çimenoğlu and Yentürk (2005) suggest that there is a causality relation between the two, where the former affects the

latter[3]. On the other hand, Agénor et al. (1997) emphasize the importance of a third factor, namely the fiscal policy changes, determining both the size of the capital flows and private domestic absorption, which affects the relative price of non-traded goods.

Figure 2: Foreign capital inflows and real exchange rates



There are few previous studies, which provide some descriptive data on the positive effect of capital flows on the share of the N-sector in GDP in the Turkish economy. Using the annual investment data published by the State Planning Organization (SPO), Yenturk (1999) and Çimenoğlu and Yenturk (2005) explain the growth in the share of N-sector investments as an outcome of increased profitability of this sector following exchange rate appreciation after the capital account liberalization. Çiftçioğlu (2005), on the other hand, emphasize the demand-increasing effects of capital inflows for the N-sector, which causes exchange rate appreciation. Tornell et al. (2003) provide some econometric evidence in their multi-country panel regressions; however, they do not provide cross sectional results. The definition of the N-sector in their analysis includes the construction industry only, which is quite restrictive.

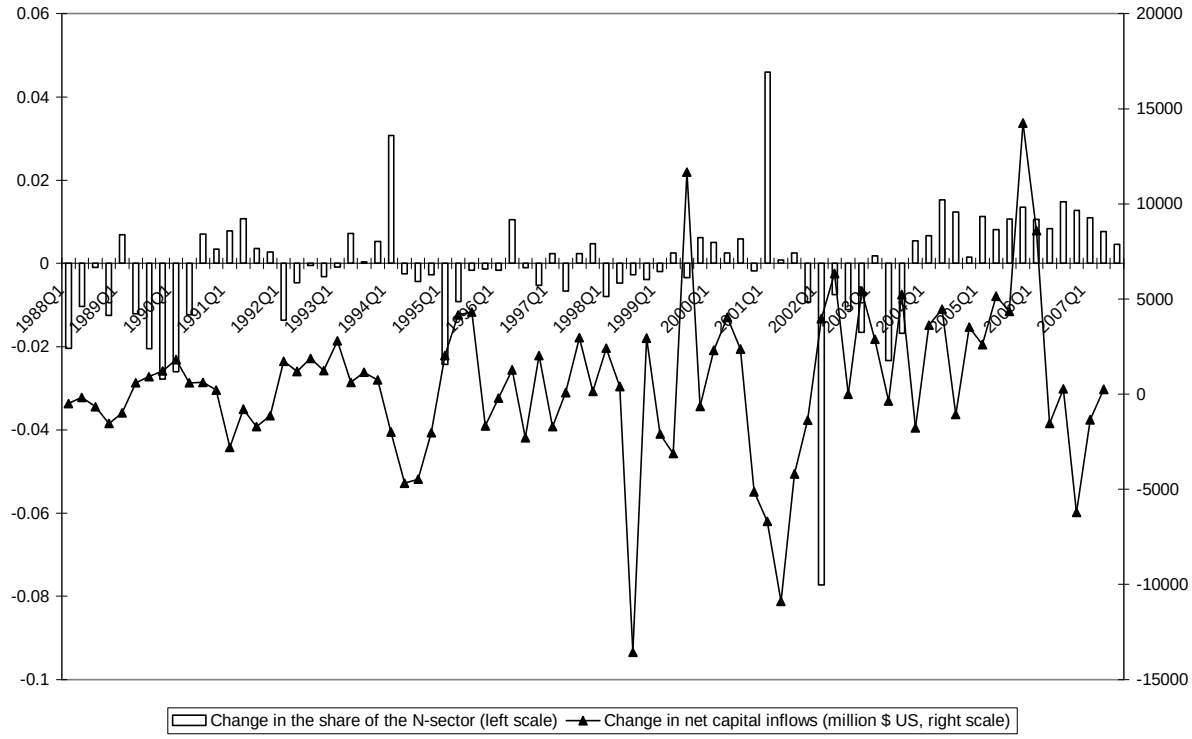
Data and Results

In this section, the extent of the effect of the capital flows on the relative size of the N-sector in Turkey is investigated. The N-sector is defined as the sum of production in construction, wholesale and retail, ownership of dwellings, and professions and services activities. The share of these activities in GDP fluctuated between 25% and 35% in

[3] See also Ulengin and Yentürk (2001) and Celasun et al. (1999) for a concise evaluation of the effects of capital flows on the Turkish economy.

1987Q1 – 2007Q3 period. Because the data shows high level of seasonality, it is used in the forth-differenced form. The changes in capital flows and the share of the N-sector in GDP from the previous year values are plotted in Figure 3. The figure implies a lagged effect of capital flows on the N-sector: the peak values of the change in the N-sector share follow the changes in capital flows after 3 to 6 quarters.

Figure 3: Foreign credit growth and the share of the N-Sector in GDP



Following the literature on the well-known "St. Louis equation" I investigate the real effect of monetary aggregates (capital flows) on real variables (the change in the relative size of the N-sector) in an Almon-lag framework. Before performing the regression analysis two separate unit root tests were performed. Table 1 shows that both the change in net capital inflows (DIFINANCE) and the change in the size of the N-sector (DIFNT) from the previous year values are stationary.

Table 1: Unit root tests

	ADF			Phillips-Perron		
Variable	Lag length	Test statistic	Prob. value	Bandwidth	Test statistic	Prob. value
DIFINANCE	3	-5.9965	0.0000	4	-6.5473	0.0000
DIFNT	4	-2.9029	0.0498	5	-6.2809	0.0000

Table 2 reports the Almon-lag estimation results[4]. The appropriate lag of DIFINANCE (11) was decided using Akaike Information Criteria values (AICs) based on *ad hoc*

[4] Eviews 5.0 is used in estimations.

estimations[5]. It was necessary to include autoregressive (AR(.)) and moving average terms (MA(.)) to overcome the serial correlation problem. Thus, the model estimated here is an ARMAX with X values being the polynomial distributed lags of DIFNT. Results with third and second order polynomials are reported in the table. Both estimations produce similar results but the adjusted-R^2 and AIC values favor the third order one. The LM tests for serial correlation up to 12 lags (Table 3) indicate that there is no problem of autocorrelation in the residuals.

Table 2: The Effects Capital Flows on the Size of the N-Sector

	ALMON-LAG ESTIMATIONS			
	Estimations with a second order polynomial		**Estimations with a third order polynomial**	
Variable	**Coefficient**	**t-statistic**	**Coefficient**	**t-statistic**
C	-0.00140	-8.907	-0.00126	-7.272
AR(1)	0.24722	2.457	0.22645	2.59889
MA(4)	-1.38689	-66.559	-1.36088	-69.023
MA(12)	0.41412	21.917	0.39307	23.374
Lags:				
0	-0.00041	-1.196	-0.00081	-1.627
1	-0.00017	-0.902	-0.00019	-1.146
2	0.00003	0.420	0.00021	1.715
3	0.00020	2.870	0.00044	2.167
4	0.00033	2.815	0.00054	2.475
5	0.00043	2.919	0.00053	3.060
6	0.00049	3.303	0.00047	4.314
7	0.00051	4.149	0.00040	4.432
8	0.00050	5.517	0.00034	2.480
9	0.00045	3.859	0.00035	1.920
10	0.00036	1.617	0.00046	2.248
11	0.00024	0.633	0.00071	2.724
Sum of lagged effects	**0.00295**	**5.018**	**0.00346**	**6.315**
R^2	0.7121		0.7303	
Adj. R^2	0.6833		0.6983	
AIC	-6.6901		-6.7255	
F-Stat	24.7309		22.8204	
Prob (F-stat)	0.0000		0.0000	

[5] The diagnostic values reported in Table 1 were obtained from the transformed coefficients of Almon-lag estimations.

Table 3: Diagnostic tests

	LM Tests for serial correlation				
	1st estimation			2nd estimation	
	F-Statistic	Probability		F-Statistic	Probability
Lag 1	0.0113	0.9157		0.0691	0.7936
Lag 2	0.1390	0.8705		0.1149	0.8917
Lag 3	0.6757	0.5705		0.3967	0.7559
Lag 4	0.5173	0.7233		0.3338	0.8540
Lag 5	0.8503	0.5203		0.7754	0.5717
Lag 6	0.9650	0.4577		0.6524	0.6880
Lag 7	1.0790	0.3898		0.7371	0.6416
Lag 8	0.9422	0.4906		0.6493	0.7326
Lag 9	0.8361	0.5866		0.6028	0.7886
Lag 10	0.9066	0.5344		0.7559	0.6692
Lag 11	0.8179	0.6226		0.7244	0.7097
Lag 12	0.7545	0.6920		0.6519	0.7868

The DIFNT data used in estimations are in billion US dollars. Thus, findings imply that a USD 10 billion increase in the capital account balance has a cumulative growth effect on the share of N-sector in GDP from 3 to 3.5 %.

Conclusions

This paper examined the effects of foreign capital inflows on the share of the non-tradables production in the Turkish economy since the capital account liberalization. I employed Almon-lag estimation procedures to account for the lagged nature of the effects of the credit increases on the real side of the economy. The findings indicate that there is a significant impact of capital flows on the size of the N-sector: a billion dollar change in the capital flows has a distributed affect on the size of the N-sector around 0.35 percent in 11 quarters. This brings us to the conclusion that the continuous growth in the relative size of the N-sector prior to the 2001 crisis and since the fourth quarter of 2003 (see figure 3) can largely be explained by the excessive capital inflows.

If the T-sector firms need the N-sector inputs for production, as suggested by many authors, what are the risks brought by this N-sector-led growth? The legal regulations following the currency crisis of 2001 limited the short-positions to be maintained by the banks to 20 percent of the balance sheet total. However, there is no regulation limiting the international borrowings of commercial firms without foreign dominated assets. Findings in this study indicate that, since the capital account liberalization foreign capital flows to the Turkish economy have been mostly directed to the N-sector firms whose assets are domestic currency denominated. As also suggested by Özmen and Yalçın (2007), the liability dollarization in Turkish corporate sector remains as an important source of fragility against financial shocks. This underlines the importance of legal regulations on and monitoring of foreign borrowings of the corporate sector.

An important factor encouraging foreign creditors to take the risk of lending to the N-sector is excessive official reserve accumulation of the central bank, which acts as an implicit bailout guarantee. As of July 2007 the volume of the official reserves of the

central bank reached up to $ 69 billion, which corresponds approximately 18 percent of the GDP. In addition to the cost of holding excessive reserves, this policy stimulates foreign credit to be directed to the firms without foreign exchange revenues, which puts a limit to the exports potential of the economy in the long run.

References

Agénor, P., J. McDermott and E. M. Ucer (1997): "Fiscal Imbalances, Capital Inflows and the Real Exchange Rate: The Case of Turkey", *IMF Working Paper*, 97/1.

Boratav, K. and E. Yeldan (2001): "Turkey, 1980-2000: Financial Liberalization, Macroeconomic (In)-Stability, and Patterns of Distribution", *mimeo*, http://bilkent.edu.tr/~yeldane

Celasun, O., C. Denizer and Dong He (1999): "Capital Flows, Macroeconomic Management, and the Financial System", *World Bank Policy Research Paper*, no: 2141.

Collyns, C. and A. Senhadji (2002): "Lending Booms, Real Estate Bubbles and the Asian Crisis", *IMF Working Paper*, WP/02/20.

Çiftçioğlu, S. (2005): "Growth, Traded Goods and External Debt Before and after Capital Account Liberalization: Case of Turkey", *Economicky Casopis*, 53 (8), 834-848.

Çimenoğlu, A. and N. Yentürk (2005): "Effects of International Capital Inflows on the Turkish Economy", *Emerging Markets Finance and Trade*, 41(1), 90-109.

FitzGerald E.V.K. (2000): "Short-Term Capital Flows, The Real Economy And Income Distribution In Developing Countries", in *Short Term Capital Flows and Economic Crises*, Stephany Griffith-Jones, Manuel F. Montes and Anwar Nasution (Eds.), Oxford University Press.

Gabriele, A., K. Boratav and A. Parikh (2000): "Instability and Volatility of Capital Flows to Developing Countries", *The World Economy*, 23(8), 1031 – 56.

Herring, R. and S. Wachter (1999): "Real Estate Booms and Banking Busts: An International Perspective", *Wharton School Working Papers*, 99-27.

Hilbers, P. , Q. Lei and L. Zacho (2001): "Real Estate Developments and Financial Sector Soundness", *IMF Working Paper*, WP/01/129.

Hossain, A. (2000), *Exchange Rates, capital flows and International trade: the Case of Bangladesh*, Dhaka, University press Limited.

Özmen, E. and C. Yalçın (2007): "Küresel ve Finansal Riskler Karşısında Türkiye'de Reel Sektör Finansal Yapısı ve Borç Dolarizasyonu", *CBRT Working Papers*, 07/06.

Prasad, E., K. Rogoff, W. Shang-Jin and M.A. Kose (2003): "Effects of Financial Globalization on Developing Countries: Some Empirical Evidence", IMF.

Sachs, J. and Larraín (1993), *Macroeconomics in the Global Economy*, Prentice Hall, Englewood Cliffs, NJ.

Tornell, A. and F. Westermann (2003): "Credit market imperfections in middle income countries", *NBER Working Paper Series*, May 2003.

_____ and L. Martinez (2003): "Liberalization, Growth and Financial Crisis: Lessons From Mexico and the Developing World", *Brooking Papers on Economic Activity*, 2, s. 1-112.

Ulengin, B. and N. Yentürk (2001): "Impacts of Capital Inflows on Aggregate Spending Categories: The Case of Turkey", *Applied Economics*, 33, 1321-1328.

UNCTAD (2004): *Trade and Development Report*, Geneva.

Yentürk, N. (1999): "Short Term Capital Inflows and Their Impact on Macroeconomic Structure: Turkey in the 1990s", *The Developing Economies*, XXXVII (1), 89-113.